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ABSTRACT

The data presented in this document make it possible to assess trends in the availability and distribution of medical and paramedical personnel in Louisiana. The report shows the existing situation and provides a basis for evaluating the nature and extent of problems related to health-care needs. The relation of persons per physician, dentist, and various paramedical personnel in Louisiana is compared with national average for the last 2 decades. It is concluded (1) that Louisiana is in a relatively disadvantaged position with regard to availability of all levels of medically related personnel; (2) that the state has not made a great deal of progress toward achieving national norms in the last 2 decades; and (3) that medical personnel are more available to urban people than to rural residents, making the distribution of medical and paramedical personnel in the state highly uneven. The document contains maps and tables relative to the study. (AN)

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The Availability and Distribution Of Health Personnel In Louisiana

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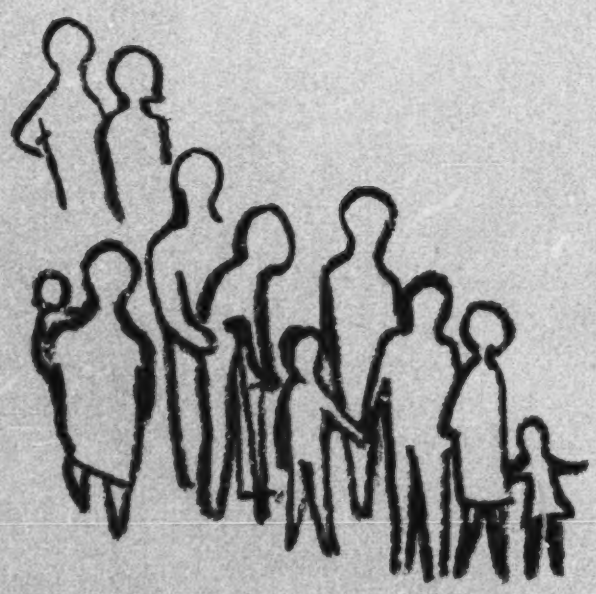

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Foreword

The study reported in this publication was funded through the Louisiana Regional Medical Program for Heart Disease, Cancer and Stroke. This monograph represents one of several similar publications to be completed by Dr. Bertrand, Mr. Baty, Mrs. Steelman and staff as part of a project related to "The Delineation of Health Care Regions Within the State of Louisiana."

The information published in these monographs should facilitate effective health care planning at all levels within the state.

The disparity between the pressures being brought to bear on the health care system by public demand and the resources within the system leave no obvious alternative other than effective broad-based health care planning.

Only if planning emanates from the grass roots level can the products of planning be expected to be implemented.

If these monographs stimulate more effective planning at the grass roots level, their purpose will be well served.

J. A. SABATIER, JR., M.D.
Director, Louisiana Regional Medical Program

Table of Contents

	Page
Foreword	3
Methodology	5
Availability of Physicians	6
Availability of Dentists	10
Availability of Registered Nurses	16
Availability of Licensed Practical Nurses	19
Availability of Medical Technologists	20
Availability of Radiologic Technologists	22
Availability of Physical Therapists	23
Availability of Dietitians	25
Availability of Optometrists	26
Summary and Implications	27

List of Tables

	Page
1. Number of Physicians and Persons per Physician, by Parish, 1950 and 1967	7
2. Specialties for Physicians, by Parish, 1967	11
3. Number of Dentists and Persons per Dentist, by Parish, 1948 and 1967	14
4. Number of Registered Nurses and Persons per Registered Nurse, by Parish, 1949 and 1967	16
5. Number of Licensed Practical Nurses and Persons per Licensed Practical Nurse, by Parish, 1967	19
6. Number of Medical Technologists and Persons per Medical Technologist, by Parish, 1967	21
7. Number of Radiologic Technologists and Persons per Radiologic Technologist, by Parish, 1968	23
8. Number of Physical Therapists and Persons per Physical Therapist, by Parish, 1968	24
9. Number of Dietitians and Persons per Dietitian, by Parish, 1968	25
10. Number of Optometrists and Persons per Optometrist, by Parish, 1968	27
11. Changes in Ratios of Persons per Physician, Dentist and Registered Nurse, for Degree of Urbanity, Louisiana and United States, 1950 and 1967	28

List of Figures

	Page
1. Persons per physician, Louisiana, 1967	9
2. Persons per dentist, Louisiana, 1967	14
3. Persons per registered nurse, Louisiana, 1967	18

The Availability and Distribution Of Health Personnel in Louisiana*

CARL F. BATY, VIRGINIA P. STEELMAN AND ALVIN L. BERTRAND**

The importance of health and medical care to the well-being of a population is self-evident. In view of this fact, it is important that continuing studies of the availability of medical personnel be made. This report is designed to show the situation which exists in Louisiana. The information given provides a basis for evaluating the nature and extent of problems related to health care needs.

In reviewing the data presented in this report, it should be noted that certain factors related to current trends appear to be influencing the distribution of medical personnel. On the one hand, a proliferation of medical specialties and the increasing complexity and cost of medical practice make the larger clinics and hospitals the most efficient mechanisms for the delivery of optimal medical treatment. On the other hand, rapid urbanization and the accompanying relative depopulation of rural areas make even more observable and dramatic the problems of medical personnel distribution. It appears reasonable to expect that rural areas of Louisiana will not only continue to be relatively disadvantaged in regard to the statewide distribution of medical personnel, but will demonstrate an increasing disparity on this measure of well-being.

This study represents an investigation of the distribution of selected medical and paramedical personnel in both rural and urban areas of Louisiana. In addition, the situation in terms of availability and distribution of this type personnel is compared with that evidenced in the late 1940's.

Methodology

The data for this study were obtained from a wide range of sources. Membership lists for medical and paramedical associations were integrated with directories from state licensing or examining boards. Indices of personnel were developed from the prepared lists and related to population estimates for each parish.[1] Medical personnel-population ratios at the national level were compared with state ratios and utilized as indices of availability of medical personnel.[2] In order to show

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[1]Footnote 1 on Page 6.
[2]Footnote 2 on Page 6.

changes over time, current state and parish data were related to data taken from a 1950 study of medical personnel in Louisiana.[3]

The basic unit of analysis for this study was the parish (county). Data were not readily available for other plausable units, such as urban places, wards, or census tracts, although analysis at these levels would have yielded meaningful results.

For analytical purposes, a distinction was made between rural and urban parishes. Rural parishes were delineated according to census classification as those which did not contain an incorporated or unincorporated place with a population of 2,500 or more in 1960. Parishes were arbitrarily designated as urban if they contained at least one urban area with a population of over 25,000 in 1960. This scheme of classification was designed to make rural-urban comparisons more meaningful. Altogether, 13 rural and nine urban parishes were delineated. The remaining 42 parishes can be seen as intermediate to these extremes.

In most cases more than one source of personnel data was available. Variations between sources were due to different methods of classification. Extreme variations are noted in the individual sections where they occur.

The distribution of medical and paramedical personnel given does not necessarily refer to all persons who were actively engaged in practice. Some persons maintaining membership in a given medical organization or certification in a health specialty were employed in other activities and others were retired. On the other hand, some practitioners were not registered for one reason or another. Each person reported as being licensed or certified was included although his or her precise employment status was not known.

Availability of Physicians

In 1967, there were 3,941 physicians residing in Louisiana who were licensed by the Louisiana State Board of Medical Examiners.[4] Approximately 97 per cent of these physicians were engaged in patient care.[5] The ratio of persons per physician in the state was 913. By comparison, there were 2,709 physicians in the state in 1950 and the persons-per-physician

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[1]Parish population projections were taken from quarterly publications of the Louisiana Department of Public Welfare. See: Louisiana Public Welfare Statistics, April, May, and June 1967 and April, May, and June 1968. These figures had been obtained by applying natural increases to census data and increasing or decreasing estimates for migration. These estimates were compared with parish population projections contained in: James R. Bobo, Sandra A. Etheridge and Norma L. Weed, *The Population of Louisiana*, Division of Business and Economic Research, College of Business Administration, Louisiana State University, New Orleans (1968). Interpolations of the parish projections for 1965 and 1970 were compared with welfare department estimates for 1967 and 1968. No excessive discrepancies were found.

[2]U.S. Public Health Service, *Health Resouces Statistics* (1968).

[3]Paul H. Price and Homer L. Hitt, *The Availability of Medical Personnel in Rural Louisiana*, Louisiana State University and Agricultural and Mechanical College, Agricultural Experiment Station, Bulletin No. 459, June 1951.

[4]Footnote 4 on Page 7.

[5]Footnote 5 on Page 7.

ratio was 985. The number of physicians increased approximately 45 per cent in this 18-year period. However, the persons-to-physician ratio improved by less than 10 per cent. Although this change represents a trend in the right direction, it is evident that the increase in number of physicians was, for the most part, absorbed by population increases.

In 1967, the national ratio of persons per physician was 639. The unfavorable position of Louisiana was indicated by the fact that the state ratio of 913 was approximately 40 per cent higher than the national ratio. Only one parish in the state, Orleans, had a persons-per-physician ratio below the national average. Six other parishes had a persons-to-physician ratio of less than 1,000 (Table 1 and Fig. 1). These included Caddo, Lafayette, East Baton Rouge, St. Tammany, Rapides, and Jefferson parishes.

TABLE 1.—Number of Physicians and Persons per Physician, by Parish, 1950 and 1967*

	1950			1967		
		Persons per Dr.			Persons per Dr.	
Parish	No. of doctors	Ratio	Rank	No. of doctors	Ratio	Rank
Acadia	30	1,567	13	29	1,751	22
Allen	12	1,563	12	12	1,644	19
Ascension	13	1,718	17	9	3,599	53
Assumption	6	2,874	47	6	3,079	50
Avoyelles	18	2,106	31	16	2,235	39
Beauregard	7	2,530	42	7	2,690	45
Bienville	10	1,909	26	5	2,919	47
Bossier	10	3,696	56	22	3,074	49
Caddo	242	722	2	387	643	2
Calcasieu	74	1,209	88	119	1,432	14
Caldwell	5	2,042	28	4	1,979	30
Cameron	3	2,078	29	3	2,555	42
Catahoula	2	5,869	61	4	2,609	44
Claiborne	17	1,474	11	12	1,208	9
Concordia	6	2,391	39	10	2,352	40
DeSoto	11	2,234	35	5	4,646	60
E. Baton Rouge	183	855	3	316	874	4
E. Carroll	4	4,074	58	6	2,144	34
E. Feliciana	13	1,468	10	16	1,285	11
Evangeline	10	3,190	52	14	2,206	38

(Continued)

[4]Louisiana State Board of Medical Examiners, Official List (1967). The data obtained from the official list of the Louisiana State Board of Medical Examiners represent all active physicians residing in Louisiana. This source was utilized in Table 1. The American Medical Association Directory was the source of data for physician specialties listed in Table 2. This table does not include federal physicians, and substantial discrepencies in the total number of physicians are noted in Bossier, Jefferson, Orleans and Vernon parishes. The discrepencies found in Jefferson and Orleans parishes are due, in part, to inappropriate inclusion of some Jefferson Parish physicians in the total for Orleans Parish. The Board of Medical Examiners lists 1,646 physicians in Orleans Parish and 304 physicians in Jefferson Parish, while the American Medical Association Directory shows 1,796 and 188 respectively.

[5]Distribution of Physicians, Hospitals, and Hospital Beds in the U.S. 1967. Chicago, American Medical Association (1968).

TABLE 1.—(Continued)

Parish	1950 No. of doctors	1950 Persons per Dr. Ratio	1950 Persons per Dr. Rank	1967 No. of doctors	1967 Persons per Dr. Ratio	1967 Persons per Dr. Rank
Franklin	16	1,839	21	8	2,846	46
Grant	4	3,555	55	3	4,079	55
Iberia	23	1,751	18	40	1,520	15
Iberville	14	1,903	24	17	1,886	26
Jackson	9	1,713	16	9	1,749	21
Jefferson	34	3,020	49	304	904	7
Jefferson Davis	15	1,757	19	16	1,976	29
Lafayette	49	1,162	7	123	853	3
Lafourche	22	1,896	23	43	1,606	17
LaSalle	11	1,154	6	8	1,570	16
Lincoln	16	1,589	14	22	1,364	12
Livingston	7	2,828	45	9	3,565	52
Madison	8	2,181	33	4	3,805	54
Morehouse	16	2,004	27	17	1,966	28
Natchitoches	18	2,097	30	15	2,187	36
Orleans	1,312	432	1	1,646	402	1
Ouachita	79	940	5	113	1,057	8
Plaquemines	6	2,371	38	5	5,704	61
Pointe Coupee	7	3,117	51	7	2,972	48
Rapides	98	920	4	138	892	6
Red River	5	2,418	41	4	2,120	33
Richland	14	1,904	25	11	1,895	27
Sabine	9	2,315	37	12	1,371	13
St. Bernard	1	11,089	62	11	4,130	56
St. Charles	6	2,216	34	11	2,461	41
St. Helena	2	4,499	59	1	9,172	64
St. James	5	3,070	50	8	2,602	43
St. John the Baptist	5	2,968	48	5	4,199	57
St. Landry	30	2,612	43	50	1,632	18
St. Martin	8	3,314	54	6	6,655	63
St. Mary	16	2,238	36	33	1,795	24
St. Tammany	20	1,344	9	60	889	5
Tangipahoa	33	1,608	15	29	2,157	35
Tensas	5	2,630	44	3	3,413	51
Terrebonne	18	2,396	40	42	1,780	23
Union	10	1,909	26	8	1,995	31
Vermilion	17	2,169	32	24	1,646	20
Vernon	9	2,106	31	13	1,271	13
Washington	21	1,822	20	25	1,836	25
Webster	19	1,875	22	20	2,038	32
W. Baton Rouge	3	3,854	57	4	4,328	58
W. Carroll	6	2,840	46	2	5,800	62
W. Feliciana	2	5,021	60	3	4,593	59
Winn	5	3,217	53	7	2,198	37
Louisiana	2,709	985		3,941	913	

*Louisiana State Board of Medical Examiners Official List (1967) and Homer L. Hitt, *The Availability of Medical Personnel In Rural Louisiana*, Louisiana State University and Agricultural and Mechanical College, Agricultural Experiment Station, Bulletin No. 459 (1951).

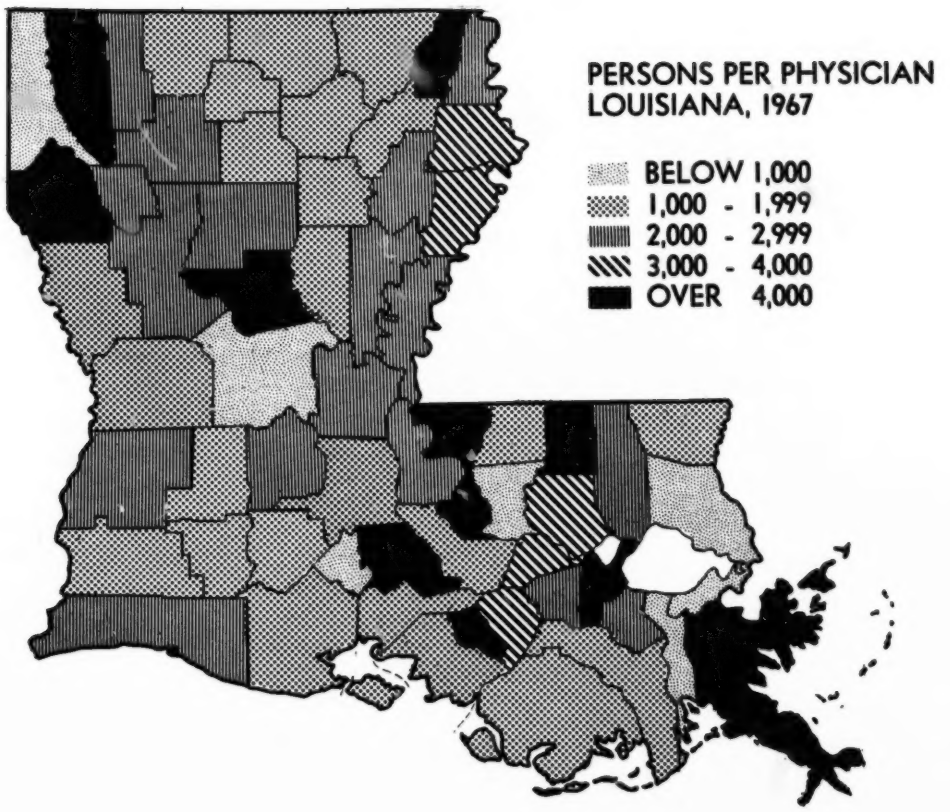

FIGURE 1.—Persons per physician, Louisiana, 1967.

At the most disadvantaged extreme, six parishes had more than 4,500 persons per physician. These were West Feliciana, DeSoto, Plaquemines, West Carroll, St. Martin, and St. Helena. However, since three of these border on parishes containing large urban centers, they can be construed to be partially dependent on the latter for service. Only St. Helena, West Feliciana, and West Carroll parishes appear relatively isolated.

When a distinction is made between completely rural parishes and parishes with urban centers of over 25,000 persons, interesting variations in patterns are noted. The 13 totally rural parishes, taken collectively, had a persons-per-physician ratio of 2,773. It is of note that three of these parishes, East Feliciana, LaSalle and Caldwell, had ratios of less than 2,000. Of the remaining rural parishes, three had ratios between 2,000 and 3,000, but seven had ratios above 3,000.

The nine parishes with urban centers of over 25,000 persons had a total of 3,170 physicians. The persons-per-physician ratio for these parishes was 545. This ratio compares favorably with the 1967 national persons-per-physician ratio of 639. It is significant that the physicians in these nine urban parishes comprised more than 75 per cent of all the physicians in the state.

The above discussion of the distribution of physicians does not give a complete picture of availability. Most physicians practice to some degree as specialists and thus the types of patients and illnesses they treat are limited. The American Medical Association lists 35 specialties. Thirty-three of these were represented among physicians practicing in Louisiana in 1967 (Table 2). The specialties of general surgery, internal medicine, pediatrics, obstetrics and gynecology, and psychiatry comprised approximately 60 per cent of the state total for specialists.[6] Therapeutic radiology and pediatric allergy were not listed by any Louisiana physician as a primary specialty. In addition, three specialties, pediatric cardiology, child psychiatry, and diagnostic roentgenology, were listed as the primary specialty of only one physician each.

The statewide total of physicians listing primary specialties other than general practice was 3,050. Approximately 85 per cent of these practitioners resided in the nine most urban parishes. Less than 1 per cent were located in the 13 totally rural parishes of the state. Orleans Parish alone accounted for over 50 per cent of all primary specialties. The parishes of Caddo, East Baton Rouge and Rapides, collectively, accounted for more than 20 per cent of all specialists.

The data reported above make it clear that Louisiana needs additional medical doctors. They also indicate that persons residing in major urban areas of the state have greater access to medical doctors than those residing in rural areas. This situation is even more marked in regard to specialists. The implications of these findings have their relevance in planning programs for the future.

Availability of Dentists

In 1967, there were 1,376 dentists in Louisiana certified by the State Board of Dentistry (Table 3 and Fig. 2). The ratio of persons per dentist was 2,615. By contrast, there were only 976 certified dentists in the state in 1948. However, the persons-per-dentist ratio of 2,667 for that year indicates that the rate of increase for dentists has barely equaled the rate of growth for the state population in the last two decades. The national ratio of persons per dentist in 1967 was 1,758. The state ratio of 2,615 was 37 per cent above the national average. Orleans, with a ratio of 1,624, was the only parish characterized by a persons-per-dentist ratio below the national average. Only six other parishes had a sufficient number of dentists to fall below the state ratio of persons per dentist. These were Claiborne, Caddo, East Baton Rouge, Jefferson Davis, LaSalle, and Jefferson. In at least one of these parishes, LaSalle, the number of dentists is exaggerated by the presence of several retirees.[7]

Five parishes—Tensas, St. John the Baptist, St. Bernard, West Carroll and East Feliciana—had a persons-per-dentist ratio of over 10,000. No dentists were located in two parishes: Cameron and St. Helena. Such findings suggest a great unmet dental care need.

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[6]The American Medical Association Directory lists primary and secondary specialties. Only primary specialties were utilized in this report.

[7]Verified by personal contact with parish officials.

TABLE 2.—Specialties for Physicians, by Parish, 1967

Specialty	Acadia	Allen	Ascension	Assumption	Avoyelles	Beauregard	Bienville	Bossier	Caddo	Calcasieu	Caldwell	Cameron	Catahoula	Claiborne	Concordia	DeSoto	E. Baton Rouge	E. Carroll	E. Feliciana	Evangeline	Franklin	Grant
General Practice	15	9	7	5	16	5	5	5	51	34	4	3	3	11	6	5	70	6	5	10	10	3
Administrative Medicine	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	3	–				
Allergy	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	1	–				
Anesthesiology	–	–	–	–	–	–	–	1	10	4	–	–	–	–	–	–	12	–	–	–	–	–
Aviation Medicine	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Cardiovascular Disease	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	2	–	–	–	–	–
Child Psychiatry	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Colon & Rectal Surgery	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	1	–	–	–	–	–
Dermatology	–	–	–	–	–	–	–	–	4	2	–	–	–	–	–	–	6	–	–	–	–	–
Diagonostic Roentgenology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Forensic Pathology	–	–	–	–	–	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
Gastroenterology	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
General Preventive Medicine	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–
General Surgery	3	–	–	–	–	–	–	1	43	14	–	–	–	1	2	–	27	–	1	2	–	–
Internal Medicine	1	–	–	1	–	–	–	1	40	8	–	–	–	–	–	–	36	–	2	1	–	–
Neurological Surgery	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	3	–	–	–	–	–
Neurology	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	1	–	–	–	–	–
Obstetrics & Gynecology	5	1	–	–	–	–	–	2	24	13	–	–	–	–	–	–	30	–	–	–	–	–
Occupational Medicine	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	5	–	–	–	–	–
Ophthalmology	1	–	–	–	–	–	–	–	21	4	–	–	–	–	–	–	13	–	–	–	–	–
Orthopedic Surgery	–	–	–	–	–	–	–	–	22	6	–	–	–	–	–	–	13	–	–	–	–	–
Otolaryngology	1	1	1	–	–	–	–	–	13	2	–	–	–	–	–	–	11	–	–	–	–	–
Pathology	–	–	–	–	–	–	–	–	9	4	–	–	–	–	–	–	8	–	–	–	–	–
Pediatrics	2	1	–	–	–	–	–	3	25	11	–	–	–	–	1	–	28	–	–	1	–	–
Pediatric Allergy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pediatric Cardiology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Physical Medicine & Rehabilitation	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
Plastic Surgery	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	1	–	–	–	–	–
Psychiatry	–	–	–	–	–	–	–	–	12	2	–	–	–	–	–	–	12	–	7	–	–	–
Public Health	–	–	–	–	–	–	–	1	1	1	–	–	1	–	–	–	1	–	–	–	–	–
Pulmonary Diseases	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	2	–	–	–	–	–
Radiology	1	–	–	–	–	–	–	–	17	7	–	–	–	–	–	–	10	–	–	–	–	–
Therapeutic Radiology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Thoracic Surgery	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	4	–	–	–	–	–
Urology	–	–	–	–	–	–	–	–	14	2	–	–	–	–	–	–	7	–	–	–	–	–

(Continued)

TABLE 2.—(Continued)

Specialty	Iberia	Iberville	Jackson	Jefferson	Jeff. Davis	Lafayette	LaFourche	LaSalle	Lincoln	Livingston	Madison	Morehouse	Natchitoches	Orleans	Ouachita	Plaquemines	Pointe Coupee	Rapides	Red River	Richland	Sabine	St. Bernard
General Practice	25	13	7	37	13	44	21	6	6	3	4	17	10	158	30	5	6	25	3	9	12	7
Administrative Medicine	–	–	1	2	–	2	–	–	–	–	–	–	–	13	–	–	–	2	–	–	–	–
Allergy	–	–	–	–	–	1	–	–	–	1	–	–	–	4	1	–	–	1	–	–	–	–
Anesthesiology	–	–	–	8	–	4	–	–	1	–	–	–	–	41	6	–	–	5	–	–	–	–
Aviation Medicine	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Cardiovascular Disease	–	–	–	–	1	–	–	–	–	–	–	–	–	7	–	–	–	–	–	–	–	–
Child Psychiatry	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Colon & Rectal Surgery	–	–	–	–	–	–	–	–	–	–	–	–	–	9	–	–	–	–	–	–	–	–
Dermatology	–	–	–	7	–	3	–	–	–	–	–	–	–	32	2	–	–	1	–	–	–	–
Diagonostic Roentgenology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Forensic Pathology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Gastroenterology	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–	–	–	–	–	–	–	–
General Preventive Medicine	–	–	–	–	–	–	–	–	–	–	–	–	–	8	–	–	–	1	–	–	–	–
General Surgery	3	2	–	17	1	12	6	1	4	2	–	1	1	190	13	–	–	18	–	–	–	–
Internal Medicine	3	–	–	27	–	8	1	1	3	–	–	–	1	268	9	–	–	12	–	–	–	1
Neurological Surgery	–	–	–	2	–	–	–	–	–	–	–	–	–	17	1	–	–	–	–	–	–	–
Neurology	–	–	–	1	–	–	–	–	–	–	–	–	–	18	–	–	–	–	–	–	–	–
Obstetrics & Gynecology	3	–	–	22	–	6	5	–	2	–	–	–	–	147	9	–	–	8	–	1	–	–
Occupational Medicine	–	–	–	–	–	–	–	–	–	–	–	–	–	11	–	–	–	–	–	–	–	–
Ophthalmology	1	–	–	9	–	8	1	–	1	–	–	–	–	82	4	–	–	4	–	–	–	1
Orthopedic Surgery	–	–	–	2	–	5	–	–	–	–	–	–	–	73	6	–	–	5	–	–	–	–
Otolaryngology	1	–	–	6	1	3	–	–	–	–	–	–	–	61	4	–	–	3	–	–	–	1
Pathology	–	–	–	2	–	3	1	–	1	–	–	–	–	55	5	–	–	3	–	–	–	1
Pediatrics	2	–	–	19	–	9	5	–	2	–	–	–	1	121	10	–	–	7	–	1	–	1
Pediatric Allergy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pediatric Cardiology	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Physical Medicine & Rehabilitation	–	–	–	–	–	–	–	–	–	–	–	–	1	3	–	–	–	–	–	–	–	–
Plastic Surgery	–	–	–	–	–	–	–	–	–	–	–	–	–	12	1	–	–	1	–	–	–	–
Psychiatry	–	2	–	6	–	4	–	–	–	1	–	–	1	125	4	–	–	14	–	–	–	–
Public Health	–	–	–	1	–	–	–	–	–	–	–	–	–	9	1	–	–	–	–	–	–	–
Pulmonary Diseases	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	1	–	–	–	–
Radiology	2	–	–	7	–	5	–	–	1	–	–	–	–	63	7	–	–	3	–	–	1	–
Therapeutic Radiology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Thoracic Surgery	–	–	–	–	–	1	–	–	–	–	–	–	–	13	–	–	–	–	–	–	–	–
Urology	1	–	–	4	–	6	–	–	–	–	–	–	–	56	2	–	–	6	–	–	–	–

(Continued)

TABLE 2.—(Continued)

Specialty	St. Charles	St. Helena	St. James	St. John	St. Landry	St. Martin	St. Mary	st. Tammany	Tangipahoa	Tensas	Terrebonne	Union	Vermilion	Vernon	Washington	Webster	W. Baton Rouge	W. Carroll	W. Feliciana	Winn	Total
General Practice	10	1	10	4	28	6	18	14	15	3	20	7	14	6	12	13	3	2	3	6	944
Administrative Medicine	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	27
Allergy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11
Anesthesiology	–	–	–	–	1	–	1	1	1	–	–	–	1	–	1	1	–	–	–	–	99
Aviation Medicine	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Cardiovascular Disease	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13
Child Psychiatry	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Colon & Rectal Surgery	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	14
Dermatology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	57
Diagonostic Roentgenology	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Forensic Pathology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Gastroenterology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	7
General Preventive Medicine	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11
General Surgery	1	–	1	–	3	–	3	1	2	-	4	–	2	–	5	3	–	–	–	1	391
Internal Medicine	–	–	–	–	3	–	–	5	2	–	2	–	–	–	1	1	–	–	–	–	438
Neurological Surgery	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	26
Neurology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	23
Obstetrics & Gynecology	–	–	–	–	5	–	2	5	5	–	4	–	3	–	3	1	–	–	–	–	306
Occupational Medicine	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	18
Ophthalmology	–	–	–	–	1	–	–	–	–	–	2	–	2	–	2	–	–	–	–	–	157
Orthopedic Surgery	–	–	–	1	1	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	135
Otolaryngology	–	–	–	–	3	–	–	1	–	–	2	–	–	–	–	–	–	–	–	–	115
Pathology	–	–	–	–	1	–	1	2	–	–	1	–	–	–	–	–	–	–	–	–	97
Pediatrics	1	–	–	–	3	–	2	4	2	–	3	–	–	–	1	2	–	–	–	–	269
Pediatric Allergy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Pediatric Cardiology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Physical Medicine & Rehabilitation	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	6
Plastic Surgery	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	18
Psychiatry	–	–	–	–	–	–	–	13	–	–	–	–	–	–	–	–	–	–	–	–	203
Public Health	–	–	–	–	1	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	19
Pulmonary Diseases	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8
Radiology	–	–	–	–	2	–	2	1	1	–	2	–	–	–	1	–	–	–	–	1	134
Therapeutic Radiology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0
Thoracic Surgery	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	21
Urology	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	100

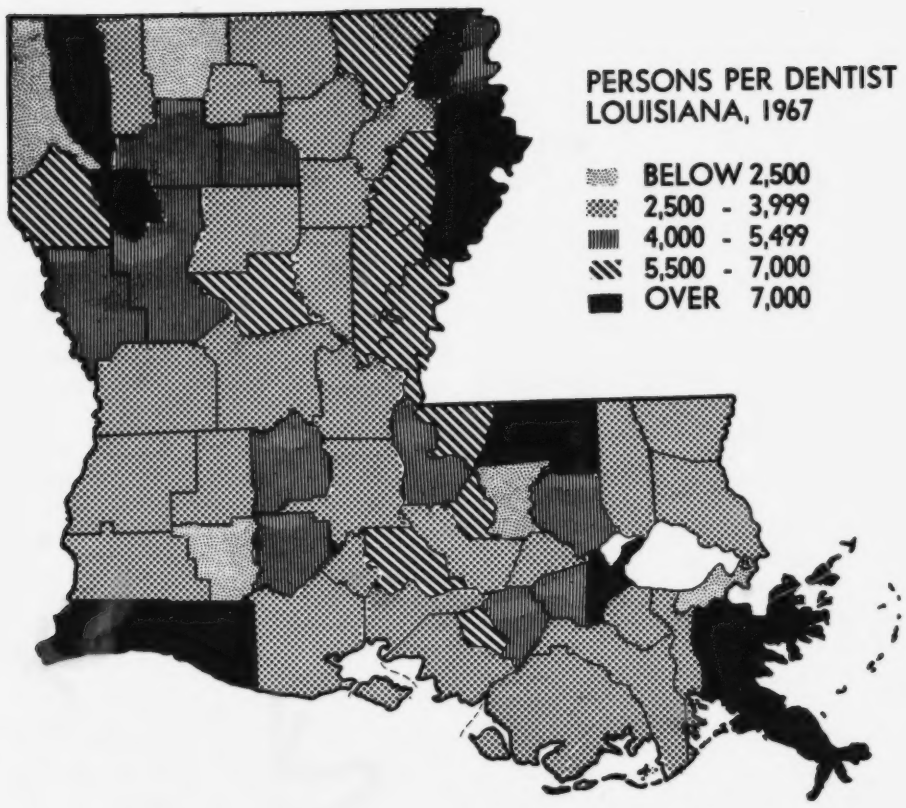

FIGURE 2.—Persons per dentist, Louisiana, 1967.

TABLE 3.—Number of Dentists and Persons per Dentist, by Parish, 1948 and 1967*

Parish	1948 No. of Dentists	1948 Persons per D.D.S. Ratio	1948 Persons per D.D.S. Rank	1967 No. of Dentists	1967 Persons per D.D.S. Ratio	1967 Persons per D.D.S. Rank
Acadia	10	4,687	38	11	4,617	37
Allen	4	4,628	37	7	2,818	12
Ascension	5	4,422	33	10	3,239	22
Assumption	6	2,917	10	4	4,619	38
Avoyelles	14	2,727	7	10	3,577	28
Beauregard	3	5,713	46	5	3,766	30
Bienville	5	4,011	24	3	4,866	39
Bossier	7	5,171	43	7	9,660	57
Caddo	87	1,952	2	137	1,817	3
Calcasieu	30	2,763	8	62	2,749	10
Caldwell	3	3,526	19	2	3,958	33
Cameron	1	6,429	50	0	——	63
Catahoula	3	4,105	26	2	5,218	42
Claiborne	10	2,602	6	8	1,811	2
Concordia	3	4,797	40	4	5,879	51
DeSoto	7	3,717	21	4	5,808	50

(Continued)

TABLE 3.—(Continued)

Parish	1948 No. of Dentists	1948 Persons per D.D.S. Ratio	1948 Persons per D.D.S. Rank	1967 No. of Dentists	1967 Persons per D.D.S. Ratio	1967 Persons per D.D.S. Rank
E. Baton Rouge	69	2,071	3	134	2,062	4
E. Carroll	2	8,421	54	3	4,288	35
E. Feliciana	3	6,292	49	1	20,556	62
Evangeline	7	4,512	35	7	4,412	36
Franklin	4	7,498	52	4	5,691	47
Grant	1	14,561	59	2	6,119	32
Iberia	14	2,833	9	20	3,039	17
Iberville	6	4,477	34	10	3,207	21
Jackson	2	7,946	53	3	5,248	43
Jefferson	9	10,249	56	108	2,546	7
Jefferson Davis	8	3,241	15	13	2,432	5
Lafayette	23	2,363	4	37	2,835	13
Lafourche	13	3,160	12	24	2,878	14
LaSalle	3	4,109	27	5	2,511	6
Lincoln	6	4,217	29	9	3,335	25
Livingston	1	19,397	60	6	5,348	44
Madison	2	8,822	55	2	7,611	55
Morehouse	6	5,194	44	6	5,572	46
Natchitoches	9	4,266	30	8	4,101	34
Orleans	391	1,414	1	407	1,629	1
Ouachita	29	2,457	5	39	3,062	18
Plaquemines	—	——	64	4	7,131	54
Pointe Coupee	6	3,710	20	4	5,200	40
Rapides	29	2,992	11	47	2,619	8
Red River	1	12,850	58	1	8,478	56
Richland	7	3,870	22	6	3,475	26
Sabine	1	21,388	61	3	5,485	45
St. Bernard	—	——	63	4	11,357	60
St. Charles	3	4,367	31	7	3,867	31
St. Helena	—	——	62	——	——	64
St. James	4	3,900	23	4	5,203	41
St. John the Baptist	3	4,942	42	2	10,499	59
St. Landry	16	4,812	41	27	3,023	16
St. Martin	5	5,291	45	7	5,705	48
St. Mary	11	3,176	13	17	3,484	27
St. Tammany	6	4,372	32	20	2,667	9
Tangipahoa	15	3,436	17	17	3,680	29
Tensas	3	4,570	36	1	10,238	58
Terrebonne	12	3,473	18	19	3,935	32
Union	3	6,487	51	5	3,192	20
Vermilion	11	3,367	16	12	3,291	24
Vernon	4	4,748	39	6	2,754	11
Washington	9	4,167	28	14	3,278	23
Webster	11	3,203	14	14	2,911	15
W. Baton Rouge	2	5,751	47	3	5,771	49
W. Carroll	3	5,828	48	1	11,601	61
W. Feliciana	1	10,378	57	2	6,890	53
Winn	4	4,063	25	5	3,077	19
Louisiana	976	2,670	—	1,376	2,615	—

******Official List Dentists*, Louisiana State Board of Dentistry (1965-1967).

The 13 totally rural parishes had an average persons-per-dentist ratio of 7,542. This ratio was over three times the persons-per-dentist ratio of 2,059 for the nine urban parishes with centers of 25,000 or over. Only one of the urban parishes, Bossier, ranked as high as 20th among the 64 parishes, while eight of the 13 totally rural parishes ranked between 50th and 64th.

Again, the data collected show an important health care need in Louisiana. In fact, the need for dentists appears more critical in some areas than the need for physicians. It is clear that a direct relationship exists between urbanization and adequate numbers of dental personnel.

Availability of Registered Nurses

The number of registered nurses in Louisiana was 7,450 in 1967 (Table 4 and Fig. 3). Approximately 90 per cent of these were classified as "active" by the Louisiana State Board of Nurse Examiners.[8] The state ratio of persons per registered nurse was 483. In 1949, there were 6,060 registered nurses in the state. This represented a persons-per-registered nurse ratio of 435. Thus, the increase in total number of registered nurses during this 18-year period was not sufficient to counter the effects of a growing state population.

TABLE 4.—Number of Registered Nurses and Persons per Registered Nurse, by Parish, 1949 and 1967*

	1949			1967		
		Persons per R.N.			Persons per R.N.	
Parish	No. of R.N.	Ratio	Rank	No. of R.N.	Ratio	Rank
Acadia	34	1,380	38	47	1,080	36
Allen	16	1,164	27	16	12,327	64
Ascension	19	1,170	28	18	1,799	54
Assumption	19	914	19	9	2,053	57
Avoyelles	29	1,312	32	32	1,118	40
Beauregard	11	1,584	43	27	697	22
Bienville	20	979	22	5	2,919	59
Bossier	48	762	16	71	952	32
Caddo	733	235	2	813	306	2
Calcasieu	199	433	7	290	588	17
Caldwell	13	800	17	18	440	8
Cameron	1	6,332	61	7	1,095	38
Catahoula	2	6,013	59	7	1,491	50
Claiborne	18	1,419	39	26	557	16
Concordia	7	2,053	53	12	1,960	56
DeSoto	16	1,581	42	19	1,223	43
E. Baton Rouge	535	280	4	775	357	5
E. Carroll	11	1,506	41	6	2,150	58
E. Feliciana	14	1,356	36	43	478	12
Evangeline	19	1,670	44	35	882	28

(Continued)

[8]Officials of the Louisiana State Nurses Association estimated that approximately 1,000 of the 7,450 registered nurses were not actively employed.

TABLE 4.—(Continued)

Parish	1949 No. of R.N.	1949 Persons per R.N. Ratio	1949 Persons per R.N. Rank	1967 No. of R.N.	1967 Persons per R.N. Ratio	1967 Persons per R.N. Rank
Franklin	22	1,350	35	18	1,265	45
Grant	14	1,028	23	2	6,119	63
Iberia	34	1,176	29	64	950	31
Iberville	43	622	10	42	764	25
Jackson	8	1,957	52	19	829	26
Jefferson	140	696	14	499	551	14
Jefferson Davis	14	1,867	48	29	1,090	37
Lafayette	88	632	11	237	443	10
Lafourche	48	862	18	112	617	18
LaSalle	12	1,043	24	8	1,570	52
Lincoln	54	470	8	68	441	9
Livingston	9	2,178	55	36	891	29
Madison	9	1,949	51	9	1,691	53
Morehouse	23	1,374	37	49	682	21
Natchitoches	20	1,903	49	49	670	20
Orleans	2,568	218	1	2,243	295	1
Ouachita	250	291	5	285	419	6
Plaquemines	12	1,170	28	24	1,188	42
Pointe Coupee	12	1,837	47	14	1,486	49
Rapides	332	266	3	386	319	3
Red River	2	6,236	60	6	1,413	48
Richland	15	1,791	46	23	906	30
Sabine	16	1,320	33	19	866	27
St. Bernard	15	714	15	29	1,667	51
St. Charles	11	1,200	30	38	712	23
St. Helena	—	——	62	7	1,310	47
St. James	9	1,719	45	20	1,041	34
St. John the Baptist	10	1,483	40	11	1,909	55
St. Landry	62	1,253	31	76	1,074	35
St. Martin	10	2,647	57	9	3,659	61
St. Mary	87	956	21	80	740	24
St. Tammany	24	1,107	25	116	460	11
Tangipahoa	57	918	20	120	521	13
Tensas	10	1,343	34	9	1,138	41
Terrebonne	64	663	12	134	558	16
Union	10	1,927	50	13	1,228	44
Vermilion	19	1,949	51	40	987	33
Vernon	17	1,116	26	30	342	4
Washington	93	407	6	108	425	7
Webster	69	513	9	62	657	19
W. Baton Rouge	17	678	13	4	4,328	62
W. Carroll	8	2,158	54	9	1,289	46
W. Feliciana	2	5,105	58	4	3,445	60
Winn	7	2,310	56	14	1,099	39
Louisiana	6,060	435		7,450	483	

*Official List of the Louisiana State Board of Nurse Examiners (1967).

In 1967, there were 299 persons per registered nurse in the nation. This ratio was approximately 40 per cent lower than the Louisiana ratio and indicated the state's unenviable position. In 1940, the national ratio of persons per registered nurse was 370. It is of note that the national ratio decreased substantially, while the state ratio increased.

Within the state, the parishes of Orleans, Caddo, Rapides, Vernon, and East Baton Rouge had less than 400 persons per registered nurse in 1967. Of these five parishes, only Orleans had a ratio which fell below the national average.

Five parishes in the state were found to have more than 3,000 persons per registered nurse. West Feliciana, St. Martin, West Baton Rouge, Grant, and Allen parishes fell within this group. It should be noted that, with the exception of Grant, each of these parishes is contiguous to a parish having a large urban center.

A comparison of the 13 totally rural parishes with the nine parishes containing urban centers of over 25,000 again revealed that the rural parishes were relatively disadvantaged. In all of the 13 rural parishes there were only 158 registered nurses. The ratio of persons per registered nurse was 1,193. Eleven of the 13 rural parishes showed over 1,000 persons per registered nurse. In the nine urban parishes the number of

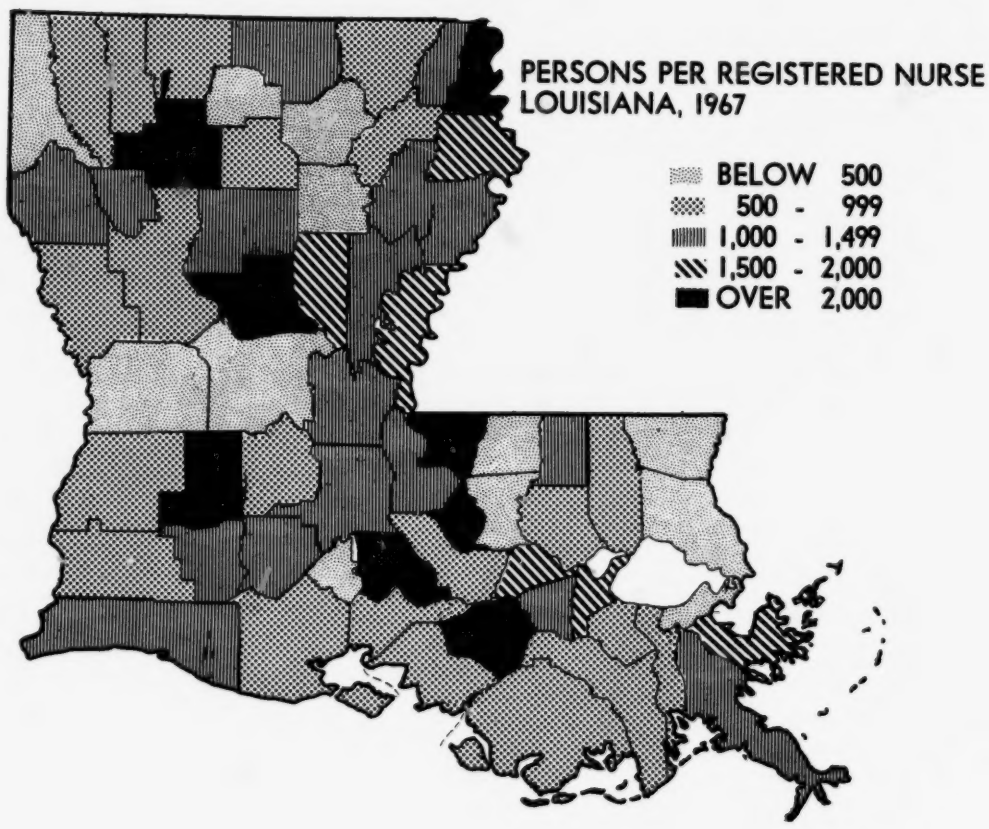

FIGURE 3.—Persons per registered nurse, Louisiana, 1967.

persons per registered nurse was only 355. This was less than one-third the number of persons served by one nurse in the rural parishes. Six of the nine urban parishes ranked within the 10 parishes having the most favorable population-nurse ratios.

These findings highlight a growing problem. This is the fact that professional nurses are in very short supply everywhere. The fact that the state ratio is less favorable than the national ratio emphasizes the need for a serious study of the nursing shortage.

Availability of Licensed Practical Nurses

In Louisiana the licensing of practical nurses is relatively new. The program began in 1949. The rapid development of this paramedical

TABLE 5.—Number of Licensed Practical Nurses and Persons per Licensed Practical Nurse, by Parish, 1967*

Parish	No. of L.P.N.	Persons per L.P.N. Ratio	Rank	Parish	No. of L.P.N.	Persons per L.P.N. Ratio	Rank
Acadia	65	781	24	Madison	4	3,805	61
Allen	16	1,233	43	Morehouse	63	531	10
Ascension	19	1,705	49	Natchitoches	37	886	35
Assumption	9	2,053	54	Orleans	1,437	460	8
Avoyelles	25	1,431	46	Ouachita	281	425	4
Beauregard	26	724	17	Plaquemines	10	2,852	57
Bienville	18	811	27	Pointe Coupee	16	1,300	45
Bossier	88	768	22	Rapides	286	430	5
Caddo	684	364	3	Red River	8	1,060	41
Calcasieu	353	483	9	Richland	24	868	33
Caldwell	29	272	1	Sabine	18	914	36
Cameron	3	2,555	56	St. Bernard	41	1,108	42
Catahoula	12	870	34	St. Charles	15	1,804	51
Claiborne	20	725	18	St. Helena	2	4,586	62
Concordia	8	2,940	58	St. James	7	2,973	59
DeSoto	32	726	19	St. John the Baptist	3	6,997	63
E. Baton Rouge	499	554	11	St. Landry	189	432	6
E. Carroll	4	3,216	60	St. Martin	20	1,647	48
E. Feliciana	22	934	37	St. Mary	33	1,795	50
Evangeline	52	594	14	St. Tammany	70	762	21
Franklin	24	949	38	Tangipahoa	72	869	32
Grant	20	612	16	Tensas	5	2,048	55
Iberia	72	844	31	Terrebonne	38	1,968	52
Iberville	40	802	25	Union	10	1,596	47
Jackson	27	583	13	Vermilion	54	731	20
Jefferson	331	830	29	Vernon	36	459	7
Jefferson Davis	39	810	26	Washington	168	273	2
Lafayette	175	599	15	Webster	49	832	30
Lafourche	56	1,234	44	W. Baton Rouge	17	1,018	39
LaSalle	12	1,046	40	W. Carroll	6	1,934	53
Lincoln	54	556	12	W. Feliciana	1	13,780	64
Livingston	39	823	28	Winn	20	769	23
				Louisiana	5,913	609	

*Official Roster of the Louisiana State Board of Practical Nurse Examiners (1967).

specialty within recent years has been, in part, a consequence of the chronic unmet need for registered nurses.

In 1967, there were 5,913 licensed practical nurses registered in the state, with a ratio of persons per licensed practical nurse of 609 (Table 5). In the United States, in 1967, there were approximately 615 persons per licensed practical nurse. It is interesting that licensed practical nurses were in relatively greater supply in Louisiana than in the nation. This appears to be one of the only medically-related occupations in the state displaying a more favorable ratio than that found at the national level.

Nine parishes in Louisiana had less than 500 persons per licensed practical nurse. These included Caldwell, Washington, Caddo, Ouachita, Rapides, St. Landry, Vernon, Orleans, and Calcasieu. At the other extreme, five parishes had more than 3,000 persons for each licensed practical nurse. These were East Carroll, Madison, St. Helena, St. John the Baptist, and West Feliciana. Only one licensed practical nurse reported living in West Feliciana Parish.

The distribution of licensed practical nurses in totally rural parishes and in parishes having large urban centers did not follow the patterns of medical personnel mentioned previously, although some similarities were noted. While the ratios were more favorable in urban than in rural parishes, the differences were not as extreme. The 13 totally rural parishes had a ratio of persons per licensed practical nurse of 1,109, which was in contrast to a ratio of 473 for the nine urban parishes. Orleans Parish, the largest urban area in the state, consistently ranked best in ratios of persons per physician, dentist, and registered nurse. However, in the case of licensed practical nurses, Orleans Parish dropped to eighth position in the state, while a rural parish, Caldwell, had the lowest ratio of persons per licensed practical nurse.

Louisiana, in 1967, compared favorably with the national ratio of licensed practical nurses. This was probably accounted for by the presence of several active training programs spread over the state. However, a thorough investigation is needed to determine why some inequities in distribution existed.

Availability of Medical Technologists

In 1967, there were 1,077 registered medical technologists in Louisiana (Table 6). The ratio of persons per medical technologist in the state was 3,342.

Almost all medical technologists work in hospitals, clinics, or other diagnostic centers. Because of this, it was expected that the distribution of medical technologists would not be as diffused as the distribution of most other medical specialties. This was in fact evidenced in the wide range found among parishes in ratios of persons per medical technologist. Vernon Parish, for example, had a ratio of persons per medical technologist of 1,650. This was accounted for by the presence of Fort Polk's medical facilities. By comparison, Webster Parish had only one medical technologist for a population of over 40,000 persons. This can probably be explained by the proximity of Webster Parish to Shreveport. Parishes with persons-per-medical technologist ratios of less than 2,500

were Vernon, Lafayette, Orleans, Livingston, Jefferson, Caddo, and East Baton Rouge.

Nine parishes in Louisiana had no registered medical technologists in residence and it should be noted that, of these, Plaquemines, DeSoto, Franklin, Jackson, West Feliciana, St. Helena, and Caldwell had hospital facilities of some type.

The 13 totally rural parishes, altogether, had only 19 medical technologists in residence, and five of these parishes had none. The ratio of persons per medical technologist in the rural parishes was 9,922. This ratio compared unfavorably with the ratio of 2,400 for the nine urban parishes. However, as mentioned previously, medical technologists are primarily hospital or clinic personnel and urban parishes obviously would contain more hospitals and clinics than rural parishes.

TABLE 6.—Number of Medical Technologists and Persons per Medical Technologist, by Parish, 1967*

Parish	No. of M.T.	Persons per Med. Tech. Ratio	Rank	Parish	No. of M.T.	Persons per Med. Tech. Ratio	Rank
Acadia	4	12,696	47	Madison	3	5,074	17
Allen	2	9,862	39	Morehouse	5	6,686	29
Ascension	3	10,797	44	Natchitoches	9	3,646	11
Assumption	2	9,238	38	Orleans	331	1,997	3
Avoyelles	5	7,153	34	Ouachita	41	2,913	9
Beauregard	3	6,277	26	Plaquemines	—	—	64
Bienville	1	14,597	49	Pointe Coupee	2	10,410	41
Bossier	10	6,762	30	Rapides	45	2,735	8
Caddo	112	2,222	6	Red River	—	—	58
Calcasieu	37	4,606	14	Richland	3	6,949	33
Caldwell	—	—	55	Sabine	3	5,485	20
Cameron	1	7,666	35	St. Bernard	8	5,679	21
Catahoula	1	10,436	42	St. Charles	3	9,022	37
Claiborne	3	4,831	15	St. Helena	—	—	57
Concordia	2	11,759	45	St. James	4	5,203	19
DeSoto	—	—	63	St. John the Baptist	2	10,499	43
E. Baton Rouge	112	2,467	7	St. Landry	12	6,801	32
E. Carroll	1	12,863	48	St. Martin	2	19,966	52
E. Feliciana	1	20,555	53	St. Mary	5	11,865	46
Evangeline	3	10,294	40	St. Tammany	8	6,668	28
Franklin	—	—	62	Tangipahoa	10	6,255	25
Grant	—	—	59	Tensas	2	5,119	18
Iberia	10	6,731	31	Terrebonne	12	6,231	24
Iberville	1	32,070	54	Union	4	3,991	19
Jackson	—	—	61	Vermilion	13	3,038	10
Jefferson	133	2,067	5	Vernon	10	1,652	1
Jefferson Davis	7	4,516	13	Washington	3	15,296	50
Lafayette	53	1,979	2	Webster	1	40,753	55
Lafourche	12	5,756	22	W. Baton Rouge	1	17,312	51
LaSalle	2	6,278	27	W. Carroll	2	5,801	23
Lincoln	6	5,003	16	W. Feliciana	—	—	60
Livingston	4	2,006	4	Winn	2	7,693	36
				Louisiana	1,077	3,342	

*Board of Registry, American Society of Clinical Pathologists (1967).

National and historical data on medical technologists were not available in a form which allowed quick comparisons. The time and resources available did not permit the processing of these data for this report. However, one can infer that there is a need for additional registered medical technologists when it is noted that some hospitals and clinics apparently did not have such personnel.

Availability of Radiologic Technologists

The distribution of radiologic technologists throughout the state followed much the same pattern found for medical personnel previously mentioned. In 1968, there were 798 radiologic technologists in Louisiana (Table 7). One estimate was that about one fourth of these were employed in hospitals.[9] The ratio of persons per radiologic technologist was 4,578.[10]

Parishes with more than one radiologic technologist for each 3,000 persons were Cameron, Evangeline, Jefferson, Caddo, and St. Tammany. Cameron's position as the parish with the most favorable ratio can be accounted for by the relatively low population of the parish. Actually, there were only four radiologic technologists registered in Cameron Parish in 1968.

Seven parishes in the state had no radiologic technologists in residence. These were Red River, West Carroll, West Feliciana, Claiborne, St. John the Baptist, Point Coupee, and Plaquemines. Other parishes showing a marked deficiency in this area, with more than 20,000 persons per radiologic technologist, were East Feliciana, Franklin, Richland, and Webster.

The 13 totally rural parishes in the state, collectively, had only 24 radiologic technologists in residence. This was reflected in a ratio of persons per radiologic technologist of 8,171. Three of the totally rural parishes, Red River, West Carroll, and West Feliciana, were included among the parishes in which no radiologic technologist reported residence.

The ratio of persons per radiologic technologist in parishes with an urban center of 25,000 was, by comparison, much more favorable. There were 490 radiologic technologists in these nine parishes. This number yielded a ratio of 3,751 persons per technologist. Six of the 10 parishes with the most favorable ratios were urban parishes.

Again, no data were readily obtainable for historical comparisons. However, as in the case of medical technologists, it is apparent that an overall shortage exists.

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[9]Health Resources Statistics, U.S. Department of Health, Education, and Welfare (1968).

[10]The American Registry of Radiologic Technologists lists the following three categories of certification: X-ray technology, nuclear medicine technology, and radiation therapy technology. Only seven persons in Louisiana were registered as nuclear medicine technologists and three were certified as radiation therapy technologists.

TABLE 7.—Number of Radiologic Technologists and Persons per Radiologic Technologist, by Parish, 1968*

Parish	No. of R.T.	Persons per R.T. Ratio	Rank	Parish	No. of R.T.	Persons per R.T. Ratio	Rank
Acadia	9	5,788	19	Madison	1	17,226	51
Allen	2	10,306	37	Morehouse	3	11,660	41
Ascension	7	4,733	14	Natchitoches	5	6,721	22
Assumption	1	17,415	52	Orleans	165	4,005	12
Avoyelles	3	12,709	44	Ouachita	35	3,323	9
Beauregard	2	9,811	26	Plaquemines	—	——	64
Bienville	1	16,365	49	Pointe Coupee	—	——	63
Bossier	22	3,159	6	Rapides	39	3,236	8
Caddo	97	2,585	4	Red River	—	——	58
Calcasieu	35	4,942	17	Richland	1	22,503	55
Caldwell	1	8,501	32	Sabine	2	8,749	34
Cameron	4	2,027	1	St. Bernard	9	5,342	18
Catahoula	1	10,593	38	St. Charles	2	14,638	46
Claiborne	—	——	61	St. Helena	2	4,349	13
Concordia	3	7,276	24	St. James	2	10,786	39
DeSoto	1	24,235	57	St. John the Baptist	—	——	62
E. Baton Rouge	57	4,913	16	St. Landry	7	12,228	42
E. Carroll	2	6,327	21	St. Martin	4	8,077	29
E. Feliciana	1	20,719	53	St. Mary	7	8,434	31
Evangeline	15	2,082	2	St. Tammany	20	2,641	5
Franklin	1	22,983	56	Tangipahoa	4	16,070	48
Grant	3	3,966	11	Tensas	1	11,618	40
Iberia	10	6,180	20	Terrebonne	6	12,592	43
Iberville	4	8,069	28	Union	1	17,160	50
Jackson	2	7,868	26	Vermilion	6	6,796	23
Jefferson	113	2,480	3	Vernon	2	9,115	35
Jefferson Davis	5	7,975	27	Washington	3	15,628	47
Lafayette	30	3,453	10	Webster	2	21,296	54
Lafourche	21	3,277	7	W. Baton Rouge	2	8,294	30
LaSalle	1	13,050	45	W. Carroll	—	——	59
Lincoln	4	7,347	25	W. Feliciana	—	——	60
Livingston	7	4,819	15	Winn	2	8,692	33
				Louisiana	798	4,578	

*The American Registry of Radiologic Technologists (1968).

Availability of Physical Therapists

The distribution of physical therapists throughout the state, as expected, was extremely uneven. In fact, only 117 physical therapists were registered with the Louisiana State Board of Medical Examiners in 1968 and these claimed residence in only 23 of the 64 parishes (Table 8).[11]

Parishes with the most favorable ratio of persons per physical therapist were Orleans, Vermilion, Caddo, and Claiborne. Each of these parishes had less than 20,000 persons for each physical therapist.

[11]The data reported here includes physical therapists registered nationally and those registered with the state.

TABLE 8.—Number of Physical Therapists and Persons per Physical Therapist, by Parish, 1968*

Parish	No. of P.T.	Persons per P.T. Ratio	Rank	Parish	No. of P.T.	Persons per P.T. Ratio	Rank
Acadia	1	52,082	19	Madison	—	——	39
Allen	—	——	45	Morehouse	—	——	60
Ascension	—	——	58	Natchitoches	1	33,605	13
Assumption	—	——	41	Orleans	55	12,015	1
Avoyelles	—	——	61	Ouachita	5	23,259	6
Beauregard	—	——	44	Plaquemines	—	——	54
Bienville	—	——	36	Pointe Coupee	—	——	48
Bossier	2	34,744	16	Rapides	4	31,549	11
Caddo	15	16,718	5	Red River	—	——	27
Calcasieu	5	34,600	15	Richland	—	——	51
Caldwell	—	——	25	Sabine	—	——	42
Cameron	—	——	24	St. Bernard	—	——	64
Catahoula	—	——	28	St. Charles	—	——	55
Claiborne	1	16,715	4	St. Helena	—	——	26
Concordia	—	——	50	St. James	—	——	49
DeSoto	—	——	53	St. John the Baptist	—	——	47
E. Baton Rouge	4	70,007	22	St. Landry	2	42,799	18
E. Carroll	—	——	31	St. Martin	—	——	57
E. Feliciana	—	——	46	St. Mary	2	29,518	8
Evangeline	—	——	56	St. Tammany	1	52,814	20
Franklin	—	——	52	Tangipahoa	2	32,140	12
Grant	—	——	30	Tensas	—	——	29
Iberia	2	30,899	10	Terrebonne	2	37,778	17
Iberville	2	16,138	3	Union	—	——	38
Jackson	—	——	35	Vermilion	3	13,592	2
Jefferson	2	140,140	23	Vernon	—	——	43
Jefferson Davis	1	29,877	9	Washington	—	——	63
Lafayette	3	34,533	14	Webster	—	——	62
Lafourche	1	68,822	21	W. Baton Rouge	—	——	37
LaSalle	—	——	33	W. Carroll	—	——	32
Lincoln	1	29,389	7	W. Feliciana	—	——	34
Livingston	—	——	59	Winn	—	——	40
				Louisiana	117	31,222	

*Roster, Louisiana Chapter, American Physical Therapy Association (1968).

None of the totally rural parishes included a physical therapist among its inhabitants. By sharp contrast, 95 of the 117 physical therapists in the state resided in nine parishes with a population center of at least 25,000. It is of even more significance that 60 per cent of the 117 physical therapists in the state were located in Orleans and Caddo parishes.

It is difficult to speak of the need of a highly specialized occupation such as that of the physical therapist without basic information relative to optimal persons-to-specialist ratios. Yet one may observe that the relative concentration of physical therapists represents a degree of inaccessability for many needy persons, especially in rural areas of the state. It

also seems likely that the number of therapists is inadequate to serve the state population.

Availability of Dietitians

The functions of dietitians are not limited to medically-related institutions. However, nutrition is an integral part of health care, and in this sense dietitians can be classified as paramedical personnel. In 1968, there were 319 members of the American Dietetic Association who reported residence in Louisiana.[12] This represented a persons-per-dietitian ratio of 11,380 (Table 9).

TABLE 9.—Number of Dietitians and Persons per Dietitian, by Parish, 1968*

Parish	No. of Dietitians	Persons per Dietitian Ratio	Rank	Parish	No. of Dietitians	Persons per Dietitian Ratio	Rank
Acadia	1	52,082	40	Madison	—	———	50
Allen	—	———	53	Morehouse	3	11,660	14
Ascension	1	33,128	35	Natchitoches	2	16,803	24
Assumption	—	———	63	Orleans	105	6,294	6
Avoyelles	2	19,065	27	Ouachita	10	11,630	13
Beauregard	—	———	52	Plaquemines	—	———	60
Bienville	—	———	48	Pointe Coupee	—	———	55
Bossier	2	34,744	37	Rapides	17	7,423	7
Caddo	22	12,308	15	Red River	1	9,867	11
Calcasieu	9	19,222	28	Richland	—	———	58
Caldwell	—	———	44	Sabine	2	8,799	10
Cameron	—	———	43	St. Bernard	1	48,080	39
Catahoula	—	———	45	St. Charles	—	———	61
Claiborne	1	16,715	23	St. Helena	1	8,699	9
Concordia	—	———	57	St. James	—	———	56
DeSoto	—	———	59	St. John the Baptist	—	———	54
E. Baton Rouge	52	5,385	3	St. Landry	1	85,597	42
E. Carroll	1	12,653	17	St. Martin	—	———	64
E. Feliciana	1	20,719	30	St. Mary	3	19,678	29
Evangeline	—	———	62	St. Tammany	4	13,204	21
Franklin	1	22,983	32	Tangipahoa	5	12,856	19
Grant	2	5,950	5	Tensas	—	———	46
Iberia	1	61,797	41	Terrebonne	6	12,593	16
Iberville	2	16,138	22	Union	1	17,160	26
Jackson	2	7,868	8	Vermilion	1	40,777	38
Jefferson	10	28,028	34	Vernon	4	4,558	2
Jefferson Davis	3	9,959	12	Washington	2	23,442	33
Lafayette	19	5,452	4	Webster	2	21,296	31
Lafourche	2	34,411	36	W. Baton Rouge	—	———	49
LaSalle	1	13,050	20	W. Carroll	1	12,739	18
Lincoln	10	2,939	1	W. Feliciana	—	———	47
Livingston	2	16,868	25	Winn	—	———	51
				Louisiana	321	11,380	

*Roster, Louisiana Dietetic Association (1968).

[12]According to the membership roster of the Louisiana Dietetic Association approximately one-third of these were employed in hospitals.

Parishes with less than 7,000 persons per dietitian were Lincoln, Vernon, East Baton Rouge, Lafayette, Grant, and Orleans. At the other extreme, 22 parishes had no dietitians reporting residence within their bounds, although 21 of these parishes had hospital facilities. It can be presumed that there were food service personnel employed in these parishes who did not qualify for membership in the American Dietetic Association. Five parishes had a persons-per-dietitian ratio ranging from 40,000 to 85,000. These were Vermilion, St. Bernard, Acadia, Iberia, and St. Landry parishes.

There were only eight members of the American Dietetic Association residing in the 13 totally rural parishes. This number yielded a persons-per-dietitian ratio of 24,512, which was over three times the ratio of 7,772 derived from the parishes with urban centers of over 25,000 persons.

It is apparent from the above data that many persons were serving as dietitians in Louisiana who were not qualified and/or professionally related to the national association. This means that many schools, hospitals, and other health-concerned establishments can be assumed to be served at a subprofessional dietary level. The need for more dietitians seems clear in all parts of the state, but especially in rural areas.

Availability of Optometrists

There were 234 members of the Louisiana State Association of Optometrists in 1968, and 15,611 persons for each optometrist in the state (Table 10). Since many physicians are trained as ophthalmologists, there is no implication that availability of eye care can be fully assessed from the number of optometrists. However, the work of the latter is an important paramedical service.

Parishes with a persons-per-optometrist ratio below 10,000 were Acadia, Beauregard, Jefferson Davis, Caldwell, Winn, Vernon, and Avoyelles. Acadia Parish, with four optometrists, had a favorable ratio of 1,302. Beauregard, the second-ranked parish, had a ratio approximately four times that of Acadia. Caldwell Parish, although the fourth-ranked parish, had only one optometrist in residence. This high ranking was due to the relatively small parish population.

There were 18 parishes with no reported optometrist. Of these parishes, DeSoto, St. James, Pointe Coupee, St. John the Baptist, and East Feliciana had estimated populations of over 20,000 persons. These parishes plus Vermilion, St. Martin, and Iberville—all of which had estimated populations of over 30,000 and only one optometrist—represent areas where the need appears to be great.

Of the 13 totally rural parishes, nine had no optometrist living within their bounds. The remaining four rural parishes, taken collectively, had only five optometrists. In contrast, the nine parishes with urban centers of over 25,000 persons were found to have an average ratio of 14,503 persons per optometrist, and a range of ratios from 11,393 in Orleans Parish to 23,162 in Bossier Parish.

TABLE 10.—Number of Optometrists and Persons per Optometrist, by Parish, 1968*

Parish	No. of O.D.	Persons per O.D. Ratio	Rank	Parish	No. of O.D.	Persons per O.D. Ratio	Rank
Acadia	4	1,302	1	Madison	—	——	57
Allen	2	10,306	8	Morehouse	3	11,660	15
Ascension	3	11,043	12	Natchitoches	2	16,803	30
Assumption	—	——	58	Orleans	58	11,393	13
Avoyelles	4	9,532	7	Ouachita	7	16,710	28
Beauregard	4	4,906	2	Plaquemines	1	25,850	43
Bienville	1	16,365	27	Pointe Coupee	—	——	62
Bossier	3	23,162	40	Rapides	7	18,028	34
Caddo	12	20,897	36	Red River	—	——	50
Calcasieu	12	14,417	—	Richland	1	22,503	38
Caldwell	1	8,501	4	Sabine	—	——	59
Cameron	—	——	48	St. Bernard	2	24,040	42
Catahoula	—	——	51	St. Charles	2	14,638	23
Claiborne	1	16,715	29	St. Helena	—	——	49
Concordia	1	21,829	37	St. James	—	——	63
DeSoto	—	——	64	St. John the Baptist	—	——	61
E. Baton Rouge	19	14,738	24	St. Landry	7	12,226	18
E. Carroll	1	12,653	19	St. Martin	1	32,306	46
E. Feliciana	—	——	60	St. Mary	5	11,807	17
Evangeline	3	10,411	9	St. Tammany	5	10,562	10
Franklin	1	22,983	39	Tangipahoa	6	10,713	11
Grant	—	——	53	Tensas	—	——	52
Iberia	3	20,599	35	Terrebonne	5	15,111	25
Iberville	1	32,276	45	Union	—	——	56
Jackson	1	15,736	26	Vermilion	1	40,777	47
Jefferson	12	23,357	41	Vernon	2	9,115	6
Jefferson Davis	5	5,975	3	Washington	4	11,721	16
Lafayette	6	17,267	33	Webster	4	11,398	14
Lafourche	4	17,206	32	W. Baton Rouge	—	——	55
LaSalle	1	13,050	21	W. Carroll	1	12,739	20
Lincoln	1	29,389	44	W. Feliciana	—	——	54
Livingston	2	16,868	31				
				Louisiana	234	15,611	

*Roster, Louisiana State Association of Optometrists (1968).

Summary and Implications

The data presented in this report make it possible to assess trends in the availability and distribution of medical and paramedical personnel in Louisiana. In addition, in some instances it was possible to compare state and parish ratios with national norms. In this regard, when the three medical categories for which national ratios were available were compared with state ratios, Louisiana was in a uniformly unfavorable position (Table 11). Louisiana was 45.7 per cent above the national average in terms of number of persons per physician; 48.7 per cent above the national average in terms of number of persons per dentist; and 61.5 per cent above national norms in terms of number of persons per registered nurse.

TABLE 11.—Changes in Ratios of Persons per Physician, Dentist and Registered Nurse, for Degree of Urbanity, Louisiana and United States, 1950 and 1967

Category	Persons per physician				Persons per dentist				Persons per R.N.			
			Per cent change				Per cent change				Per cent change	
	1950	1967	Favorable	Unfavorable	1948[c]	1967	Favorable	Unfavorable	1949[c]	1967	Favorable	Unfavorable
Parishes with no population center of more than 2,500[a]	2,520	2,773		10.0	5,944	7,542		26.9	1,475	1,193	19.1	
Parishes with population centers over 2,500 but none 25,000 or more[a]	2,123	1,629	23.3		4,471	3,423	23.4		1,064	735	30.9	
Parishes with a population center of 25,000 or more[a]	621	545	12.2		1,821	2,059		13.1	263	355		35.0
Louisiana	985	931	5.[illegible]		2,670	2,615	2.1		435	483		11.0
United States[b]	742	639	13.8		1,938	1,758	9.3		501	299	54.3	

[a] These parishes were categorized according to 1960 census figures only.
[b] Statistical Abstract of the United States, 1954.
[c] 1950 data not available.

In the last two decades the position of the state in relation to national averages has worsened 12.9 per cent for physicians, 19.9 per cent for dentists, and 74.7 per cent for registered nurses. The discrepancies between the state and national situations with regard to the above medical personnel appear to be increasing with time. It is evident that Louisiana will remain in an unfavorable position in relation to national averages for persons per physician, dentist, and registered nurse unless remedial programs are inaugurated.

It is not as easy to generalize about the changes in the patterns of distribution of medical and paramedical personnel within the state. The degree and direction of change is different for each of the major medically-related occupations.

The ratios of persons per physician showed moderate drops over the last two decades in parishes with population centers of 25,000 or more, and for parishes with centers ranging from 2,500 to 25,000. However, there has been a very slight decrease in the ratio of persons per physician in totally rural areas.

Persons-per-dentist ratios changed for the better since 1948 only in those parishes with population centers between 2,500 and 25,000. However, this improvement is sufficient to make the statewide trend appear slightly favorable. Parishes without population centers over 2,500, and parishes with an urban center larger than 25,000 persons, show unfavorable trends in persons-per-dentist ratios. When considered in light of the fact that the rural parishes were already in a disadvantaged position, the 26.9 per cent change for the worse in these parishes is extremely significant for future planning.

The change in ratios of persons per registered nurse from 1949 to 1967 is also quite uneven. Favorable trends can be noted in rural parishes and in parishes with population centers ranging from 2,500 to 25,000. These changes are negated, however, by the extremely unfavorable trend in ratios of persons per registered nurse in parishes with population centers of 25,000 or more. The 35 per cent rise in ratios in these parishes over the past 18 years was sufficient to keep the statewide ratio of persons per registered nurse unfavorable. The latter trend attains greater significance in light of the fact that the national ratio of persons per registered nurse showed a 54.3 per cent change for the better in the same period of time that the state ratio worsened by 11 per cent.

Data were not available for longitudinal trend comparisons of paramedical personnel, including licensed practical nurses, medical technologists, radiologic technologists, physical therapists, dietitians, and optometrists. However, statewide ratios for these paramedical classifications were 609 persons per licensed practical nurse; 3,342 persons per medical technologist; 4,578 persons per radiologic technologist; 31,222 persons per physical therapist; 11,380 persons per dietitian, and 15,611 persons per optometrist.

Several basic conclusions can be drawn from an analysis of the data collected. First, it is clear that Louisiana is in a relatively disadvantaged position with regard to all levels of medically-related personnel. Second, it is obvious that the state has not made a great deal of progress toward

achieving national norms in the last two decades. Third, it is readily noted that medical personnel are more available to urban people than to rural residents. The differences between rural and urban areas in this respect have remained fairly stable since the late 1940's.

There are two clear implications which may be derived from the findings of this study. The first is that the people of Louisiana as a whole do not have available to them the numbers of medical and paramedical personnel which are available to much of the nation's population. To the extent that national norms exceed Louisiana averages, the people of the state can be said to be underserviced. The second implication is that the distribution of medical and paramedical personnel in the state is highly uneven. To this extent some of the state's people have important health care advantages over others. All in all, there appears to be a need for a comprehensive approach to planning and development in the state with respect to the availability and distribution of medical personnel.